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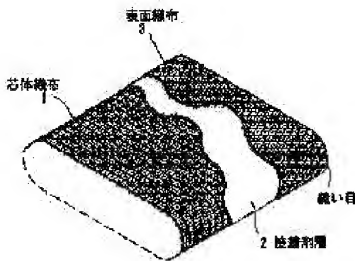
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B31F 1/20(21)Application
number : **09-268564**(71) **KITAMURA ATSUSATO**
Applicant :(22)Date of filing : **01.10.1997**(72)Inventor : **KITAMURA ATSUSATO****(54) PRESSURE CONTACT BELT FOR CORRUGATION PROCESSING AND
PRODUCTION OF CORRUGATED PROCESSED ARTICLE**

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a pressure contact belt for processing corrugations hard to generate trouble and having long life though used under an extremely severe condition processing corrugations and a method for producing a corrugated processed article by using the pressure contact belt.

SOLUTION: A pressure contact belt is made of a fabric and has fundamental layered constitution of core fabric 1/adhesive layer 2/surface fabric 3. The core fabric 1 is composed of a seamless fabric using heat resistant high strength fiber yarn and the surface fabric 3 is composed of a fabric having an obliquely crossing warp and weft structure using heat-resistant high strength fiber yarn and a fluoroplastic impregnated or coated layer is provided to at least the surface fabric 3. A sheet to be processed is brought into contact with the corrugation die of a corrugator under pressure by using the pressure contact belt to produce a corrugated processed article.



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JAPANESE

JP,11-105171,A

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT
OF THE INVENTION TECHNICAL PROBLEM MEANS OPERATION
EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

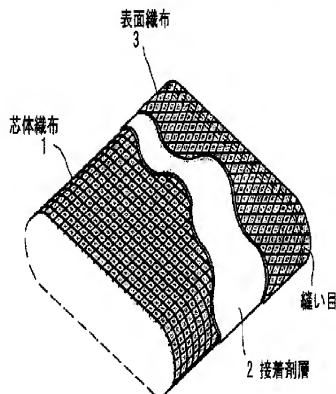
[Field of the Invention]This invention relates to the pressure welding belt for welding
a processed sheet by pressure to a corrugating roll on the occasion of corrugated
processing. It is related with the method of manufacturing a corrugated work using the
pressure welding belt.

[0002]

[Description of the Prior Art]It faces manufacturing a corrugated fiberboard by
corrugated processing. A green sand core is sent to one pair of corrugating rolls which
get into gear mutually, stage processing is carried out, it sizes on the portion of the
mountain of the green sand core which carried out stage processing, and the method of
pasting together by contacting and pressing a liner with a press roll is taken (a press-
roll method will be called).

[0003]These days, a belt is welded by pressure to the near corrugating roll with which
sizing is made, and the method of sending in a liner from on the green sand core
which carried out stage processing between these corrugating rolls and belts, and
performing pasting between both attracts attention (a pressure welding belt method

Drawing selection Representative draw



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will be called).

[0004]About the latter pressure welding belt method, JP,59-124842,A, JP,4-305443, A, JP,5-329966,A, JP,6-8360,A, JP,6-55675,A, JP,6-297614,A, JP,6-305060,A, and JP,7-125114,A have an indication.

[0005]As a belt for using mainly in a pressure welding belt method, to JP,7-60877,A. The wide belt of the structure which laminated the skin canvas which has elasticity in the belt longitudinal direction with which the straight side and the cross direction of the belt were covered at the surface side with the coating layer which was excellent in the mold-release characteristic in the surface via the heat-resistant elastomer layer using the canvas core body of seamless endless form is shown. The lamination at this time is "a skin canvas / heat-resistant elastomer layer / canvas core body." The code in every direction which constitutes a canvas core body is aromatic polyamide fiber threads or polyether ether ketone fiber threads. Skin canvases are the textiles which used the mixed yarn of aromatic polyamide fiber threads and a urethane elastic fiber for the vertical code and in which they used aromatic polyamide fiber threads, nylon fiber thread, or polyester fiber thread for the horizontal code, or are stockinet ***** using aromatic polyamide fiber threads. The mold-release characteristic coating layer which covers the surface of a skin canvas also has a statement that it is preferred to comprise a compound of a heat-resistant elastomer and a powder-like fluoro-resin.

[0006]Although it is unstated about the object for corrugated processing, as a thing about the conveyor belt used, for example for a paper feed process to JP,6-63536,U. It is formed on the reinforcement layer which dried [with which dried and it was impregnated] and sintered fluororesin to the heat-resistant fiber base material, and this reinforcement layer, fluororesin is dried [it is impregnated and] and sintered to the base fabric which carried out knitting ** of the heat-resistant textiles, and the heat-resistant lamination conveyor belt possessing the abrasion proof layer which gave elasticity is shown. The examples of heat-resistant textiles are glass fiber, carbon fiber, an aramid fiber, aromatic arylate textiles, etc. According to the example, the fluororesin with which it impregnates is the dispersion of polytetrafluoroethylene (PTFE).

[0007]

[Problem(s) to be Solved by the Invention]Under hot environments, the pressure welding belt for corrugated processing is used, and high speed operation is presented, Very big tensile force is applied, vibration is also large, and it is irregular and wrinkles visit the cross direction of a belt easily wavelike, and a pressure welding subject is extremely used under a severe condition as the paste further used for pasting adheres.

[0008]Although it was the belt made from steel which was conventionally used as a belt for corrugated processing by a pressure welding belt method, There is a possibility of doing human damage at the time of belt cutting which takes place by the frequency which cannot be referred to as rare, and also the damage to on the device at that time is also large, and the belt made from steel has a limit in respect of bending-fatigue-resistance nature intrinsically.

[0009]When the wide belt of JP,7-60877,A is used, or when the heat-resistant

lamination conveyor belt of JP,6-63536,U is used for corrugated processing, It became clear that there was a problem that the filament of the heat-resistant textiles represented by aromatic polyamide textiles (aramid fiber) breaks easily like a bamboo exactly. This is considered because heat-resistant textiles, such as aromatic polyamide textiles, cannot finish bearing the shock and transversal stress which are added when using it for corrugated processing since it is intrinsically upright although they are very strong in the power of a tensile direction.

[0010]under such a background, this invention is called object for corrugated processing, in spite of being extremely used under a severe condition, It aims at providing the long lasting pressure welding belt for corrugated processing that it is hard to produce a trouble, and providing the method of manufacturing a corrugated work using the pressure welding belt.

[0011]

[Means for Solving the Problem]A pressure welding belt for corrugated processing of this invention is a belt made of textile fabrics for welding a processed sheet by pressure to a corrugating roll on the occasion of corrugated processing, Axis textile fabrics (1) /adhesives layer (2) Have the lamination of foundations of /surface textile fabrics (3), and. Said axis textile fabrics (1) consist of seamless textile fabrics which used heat-resistant high strength fiber threads, Said surface textile fabrics (3) consist of textile fabrics made in an organization of the circumstances crossing diagonally which used heat-resistant high strength fiber threads, and being impregnated thru/or an enveloping layer by fluororesin is provided in surface textile fabrics (3) at least.

[0012]A manufacturing method of a corrugated work of this invention manufactures a corrugated work by welding a processed sheet by pressure to a corrugating roll of corrugator using the above-mentioned pressure welding belt.

[0013]

[Embodiment of the Invention]This invention is explained in detail below. In this invention, fiber threads mean a filament, and the thickness is not limited.

[0014]<Basic lamination> The pressure welding belts of this invention are axis textile fabrics (1) /adhesives layer (2) It has the lamination of the foundations of /surface textile fabrics (3).

[0015]<Axis textile fabrics (1)> Axis textile fabrics (1) consist of seamless textile fabrics which used heat-resistant high strength fiber threads. Seamless textile fabrics are textile fabrics which do not have a joint in the peripheral length direction. the textile at this time -- although it usually comes out of an organization to consider it as a plain-weave organization -- a case -- a twill weave (twill) organization and Chu-tzu -- textile -- organizations and these change -- textile -- it can also be considered as an organization etc. Seamless textile fabrics can be manufactured by the following method.

[0016]namely, -- using warp and the woof -- a bag -- textile -- if weaving is performed by a method, seamless (there is no joint) tubed textile fabrics can be manufactured. Bag weave is the method of forming a cartridge one by one, making annular [one] form by arranging warp to front warp and back warp, and making the woof go back

and forth two times, and binding of a rear surface is performed only at both ends. When adopting the bag weaving method, the warp at the time of weaving turns into cross direction run thread of seamless textile fabrics, and the woof at the time of weaving turns into the peripheral length direction (diameter direction) run thread of seamless textile fabrics. If the obtained tubed hollow weave thing is cut into a diameter direction, the seamless textile fabrics of the target size will be obtained. In this case, since a fray may be produced from a cut end, whether it is an ear devises the treatment of **, attachment of reinforcing cloth and reinforcement sheets, etc. to that cut one end if needed.

[0017]Seamless textile fabrics can be manufactured also by carrying out ** ON of the cross direction run thread to the peripheral length direction run thread beforehand warped in the shape of KASE. Since it becomes difficult to perform an opening in the stage of the last of textile, the last should just complete textile manually if needed. An ear organization will not be frayed, if this weave type is adopted and a seamless belt is manufactured.

[0018]As heat-resistant high strength fiber threads used for manufacture of axis textile fabrics (1). For example, a metal fiber (stainless-steel textiles, shape memory alloy, etc.), The thread made for a ceramics fiber, glass fiber, carbon fiber, an aramid fiber, polyether ether ketone textiles, polyamidoimide textiles, a polyimide fiber, polybenzimidazole textiles, liquid-crystal-polyester textiles, etc. can be illustrated. Especially in these, an aramid fiber is important and important also for polyether ether ketone textiles and stainless-steel textiles. It is preferred that it is the monofilament and multifilament which were made from continuous glass fiber, when it is a monofilament, heat-resistant high strength fiber threads can be lengthened and arranged, or two or more are twisted and they can also be used for them. The slit thread which carried out the slit of the film can also be used. What gave the fluff is suitably used by cutting a filament to suitable length and applying a twist like spun woolen yarn.

[0019]About 1000-10000 deniers of thickness of the heat-resistant high strength fiber threads used for manufacture of axis textile fabrics (1) shall be about 1500-8000 deniers preferably in many cases, although there is no limitation in particular.

[0020]As for the peripheral length direction run thread, when heat-resistant high strength fiber threads are throwing, it is desirable to arrange thread of left-hand lay and thread of Z **** with sufficient balance in order to prevent meandering at the time of belt runs. arranging thread of left-hand lay with sufficient balance, if thread of S and Z **** is expressed with Z -- for example, SZSZSZ -- arrangement like ..., and SSZSSZSZ -- it is arrangement like ..., and there are other various variations.

[0021]<Adhesives layer (2)> An adhesives layer (2) is made to intervene between the above-mentioned axis textile fabrics (1) and the below-mentioned surface textile fabrics (3), and are both textile fabrics (1). It is a layer for making (3) unify. this adhesives layer (2) -- the film layer of fluororesin -- especially -- the film layer of a tetrafluoroethylene perfluoroalkyl vinyl ether copolymer (PFA) or a tetrafluoroethylene hexafluoropropylene copolymer (FEP). It is desirable that it is a

film layer of the former PFA especially.

[0022]<Surface textile fabrics (3)> Surface textile fabrics (3) consist of textile fabrics made in the organization of the circumstances crossing diagonally which used heat-resistant high strength fiber threads. As textile fabrics made in the organization of the circumstances crossing diagonally, bias cut textile fabrics are specifically raised. Bias cut textile fabrics are obtained by judging to an oblique direction, after cutting out tubed seamless textile fabrics to an oblique direction or making flat textile fabrics tubed.

[0023]The same thing as the heat-resistant high strength fiber threads used for manufacture of the axis textile fabrics (1) described previously as heat-resistant high strength fiber threads used for manufacture of surface textile fabrics (3) is used. The thickness of the heat-resistant high strength fiber threads at this time shall be about 500-3000 deniers in many cases, for example, although there is no limitation in particular.

[0024]<being impregnated thru/or an enveloping layer> -- the pressure welding belt of this invention -- above -- axis textile fabrics (1)/adhesives layer (2) although it has the lamination of the foundations of /surface textile fabrics (3) -- surface textile fabrics (3) **** (or this and axis textile fabrics (1)) -- being impregnated thru/or the enveloping layer by fluororesin is provided in a proper stage.

[0025]Surface textile fabrics (3) (or this and axis textile fabrics (1)) When providing the impregnation layer by fluororesin, What is necessary is just to repeat the operation dried and calcinated (sinter) two or more times, after impregnating textile fabrics (it may be after considering it as a belt) with the dispersion of polytetrafluoroethylene (PTFE). As for the coating weight per time, since a mud crack will be produced by desiccation on the occasion of dispersion processing of this PTFE if impasto is carried out at once, it is desirable to limit to about 20 micrometers or less by the resin thickness after baking, to repeat immersion-dry-calcination 5 to 10 times, and to make it desired thickness. Calcination temperature shall be about 350-400 ** in many cases.

[0026]Surface textile fabrics (3) (or this and axis textile fabrics (1)) When providing the enveloping layer by fluororesin, PFA from textile fabrics (it may be after considering it as a belt), FEP, What carried out fused coating of the heat-resistant constituent which contains the granular material of fluororesin, such as PTFE, or those fluororesin so much, or half-fused fluororesin films, such as PFA and FEP, or it is covered, and the method of bonding by thermo-compression is adopted. In addition, after covering the raw film of PTFE, the method of calcinating at the temperature of about 350-400 ** in a proper stage is also employable.

[0027]Surface textile fabrics (3) (or this and axis textile fabrics (1)) As heat-resistant high strength fiber threads when carrying out weaving, If the covering thread which performed covering by thread (especially film thread) of fluororesin, and throwing which twisted thread of fluororesin are used or thread of fluororesin is used together for heat-resistant high strength fiber threads, Since the weld unification of the organization in every direction which thread of fluororesin flows and constitutes a belt when heat-treating more than the melting point of fluororesin after weaving is carried

out, being impregnated thru/or the enveloping layer by fluororesin can be formed in textile fabrics.

[0028]<Others> The layer of further others can also be added to the pressure welding belt obtained by carrying out in this way if needed. For example, the film layer of fluororesin can be provided in the rear face of a belt in a proper stage. It can impregnate with hardening resin, such as a polyimide system resin prepolymer, from the rear-face side of a belt in a proper stage, and can also be made to harden by performing a cure.

[0029]<A pressure welding belt and corrugated processing> In this invention, it uses as a belt for pasting a liner together from on the green sand core which carried out stage processing of this pressure welding belt as a belt for welding a processed sheet by pressure to a corrugating roll on the occasion of corrugated processing that is,.

[0030]Although the size of this pressure welding belt changes with the size of the corrugating roll of corrugator, or spaces between rolls, width shall set to about 1600-3000 mm, and peripheral length shall be not less than about 2000 mm in it in many cases, for example.

[0031]Drawing 2 is a mimetic diagram showing an example of the corrugator for corrugated fiberboard manufacture. As for the corrugating roll of another side, and (6), (4) is [a green sand core and (8)] liners a sizing device and (7) corrugating roll of one of the two and (5) among drawing 2. The pressure welding belt of this invention is welded by pressure towards corrugating roll (4) of one of the two via the green sand core (7) and liner (8) after stage processing in drawing 2.

[0032]<Operation> If it is in the pressure welding belt of the above-mentioned structure, required toughness is acquired with axis textile fabrics (1). And since the surface textile fabrics (3) unified by the adhesives layer (2) on it are made in the organization of the circumstances crossing diagonally using heat-resistant high strength fiber threads, Axis textile fabrics (1) will be reinforced as a "diagonal brace" with surface textile fabrics (3), and the textiles filament which constitutes axis textile fabrics (1) also with vibration added at the time of corrugated processing or transversal stress does not break. The vibration at the time of corrugated processing is also absorbed and eased by existence of the surface textile fabrics (3) which consist of a diagonal-crossing organization.

[0033]In addition, the abrasion resistance which was excellent since the impregnation layer or enveloping layer by fluororesin was formed in surface textile fabrics (3) at least is obtained, since it is non cohesiveness further, it is few and adhesion of the paste used at the time of corrugated processing is easy also for removal of the adhering paste.

[0034]therefore, this pressure welding belt is very tough, and is called object for corrugated processing -- in spite of being extremely used under a severe condition, it is hard to produce troubles, such as cutting, breakage, and wrinkles slippage, and long lasting.

[0035]

[Example]Next, an example is given and this invention is explained further.

[0036]Example 1 drawing 1 is a perspective view showing an example of the pressure welding belt of this invention typically.

[0037]As the warp (it becomes the cross direction run thread of a pressure welding belt) and the woof (it becomes the peripheral length direction run thread of a pressure welding belt) at the time of bag weave weaving, aramid fiber monofilament yarn with a thickness [as an example of heat-resistant high strength fiber threads] of 4500-6000 deniers was used. using above-mentioned warp and woof -- a bag -- textile -- weaving of the tubed seamless textile fabrics of a wide plain weave was carried out by the method. Thus, the obtained seamless textile fabrics were cut into prescribed width in the diameter direction, and were used as axis textile fabrics (1).

[0038]Long tubed seamless textile fabrics were obtained by carrying out bag textile, using aramid fiber monofilament yarn with a thickness [as an example of heat-resistant high strength fiber threads] of 1000 deniers as warp and the woof. This was judged in the direction of 45 degree using bias cutting equipment, and both ends were joined, and it was considered as the endless belt, and used as surface textile fabrics (3).

[0039]After impregnating these surface textile fabrics (3) with the dispersion of PTFE, the operation dried and calcinated was repeated 7 to 8 times. Calcination temperature was 360-380 **.

[0040]Where the axis textile fabrics (1) obtained above are hung between rolls, after making the PFA film (or FEP film) as an adhesives layer (2) into a semi molten state and carrying out rolling covering on it, From moreover, surface textile fabrics (3) were stratified and it bonded by thermo-compression at the temperature more than the melting point of PFA (or FEP) further. Thereby, they are axis textile fabrics (1). / adhesives layer (2) Since the tubed belt which has the lamination of the foundations of /surface textile fabrics (3) was obtained, the deckle edge side was cut and arranged, and sewing-machine sewing of the neighborhood of the deckle edge side was carried out in the diameter direction.

[0041]A cure can be performed and a reinforcement layer can also be made to form, after applying and impregnating with polyimide resin (for example, Du Pont line unsaturation polyimide "Pyre-ML") the field which becomes the belt rear-face side of axis textile fabrics (1) in a proper stage, if required.

[0042]Like the above, the pressure welding belt which produced by carrying out was very tough to hauling, and had desirable width rigidity, and heat resistance was high, and moreover, the surface is non cohesiveness and had abrasion resistance.

[0043]This pressure welding belt is used as a pressure welding belt (pressure welding belt for pasting a liner together from on the green sand core which carried out stage processing) for welding a processed sheet by pressure to a corrugating roll on the occasion of corrugated processing, When it carries out like drawing 2 and a corrugated fiberboard is manufactured, also with vibration and transversal stress which can perform smooth pressure welding and are moreover added at the time of corrugated processing, the textiles filament (aramid fiber monofilament yarn) which constitutes axis textile fabrics (1) by existence of the surface textile fabrics (3) made

in the organization of the circumstances crossing diagonally did not break, and the life of the belt was compared with the pressure welding belt currently used in the commercial scene, was boiled markedly, and was long.

[0044] Spun woolen yarn of the left-hand lay obtained by cutting an aramid fiber monofilament to suitable length, and applying a twist as an example of heat-resistant high strength fiber threads as peripheral length direction run thread of example 2 belt and Z twist was lengthened, arranged and used, and it warped in the shape of KASE. As cross direction run thread of a belt, polyether ether ketone monofilament yarn as an example of heat-resistant high strength fiber threads was used.

[0045] ON of the above-mentioned cross direction run thread was carried out to the peripheral length direction run thread beforehand warped in the shape of KASE as mentioned above, and weaving was carried out to the plain weave. The stage of the last which cannot perform an opening easily completed textile manually. Thereby, the belt made of wide tubed seamless textile fabrics was obtained. Since both handle parts have structure which the cross direction run thread which carried out ON turns up if it is in this belt, a fray is not produced. Thus, the obtained seamless textile fabrics were used as axis textile fabrics (1).

[0046] Long tubed seamless textile fabrics were obtained by carrying out bag textile, using aramid fiber monofilament yarn as warp and the woof. This was judged in the direction of 45 degree using bias cutting equipment, and both ends were joined, and it was considered as the endless belt, and used as surface textile fabrics (3).

[0047] After impregnating these surface textile fabrics (3) with the dispersion of PTFE, the operation dried and calcinated was repeated 7 to 8 times. Calcination temperature was 360-380 °C.

[0048] After making the PFA film as an adhesives layer (2) into the semi molten state and carrying out rolling covering on the axis textile fabrics (1) obtained above, from up [the], surface textile fabrics (3) were stratified and it bonded by thermo-compression at the temperature more than the melting point of PFA further. Thereby, they are axis textile fabrics (1). /adhesives layer (2) The tubed belt which has the lamination of the foundations of /surface textile fabrics (3) was obtained.

[0049] The pressure welding belt which produced by carrying out like the above had the same outstanding character as the case of Example 1, and when this was used as a pressure welding belt for welding a processed sheet by pressure to a corrugating roll on the occasion of corrugated processing, it produced no trouble.

[0050]

[Effect of the Invention] If it is in the pressure welding belt of this invention as the paragraph of the operation also described, - Since the surface textile fabrics (3) unified by the adhesives layer (2) that required toughness is acquired with axis textile fabrics (1), -, and on it are made in the organization of the circumstances crossing diagonally using heat-resistant high strength fiber threads, The upright textiles filament which constitutes axis textile fabrics (1) also with vibration which axis textile fabrics (1) will be reinforced as a "diagonal brace" with surface textile fabrics (3), and is added at the time of corrugated processing, or transversal stress does not break. - Since that the

vibration at the time of corrugated processing is also absorbed and eased by existence of the surface textile fabrics (3) which consist of a diagonal-crossing organization, the impregnation layer by fluororesin, or the enveloping layer is formed in surface textile fabrics (3) at least again, The outstanding abrasion resistance is obtained, and since it is non cohesiveness further, adhesion of the paste used at the time of corrugated processing does so the effect which was excellent in it being few and removal of the adhering paste being easy etc.

[0051] therefore, the pressure welding belt of this invention is very tough, and is called object for corrugated processing -- in spite of being extremely used under a severe condition, it is hard to produce troubles, such as cutting, breakage, and wrinkles slippage, and long lasting.

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[JP,11-105171,A]

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THE INVENTION TECHNICAL PROBLEM MEANS OPERATION EXAMPLE
DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

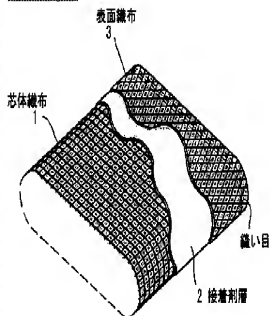
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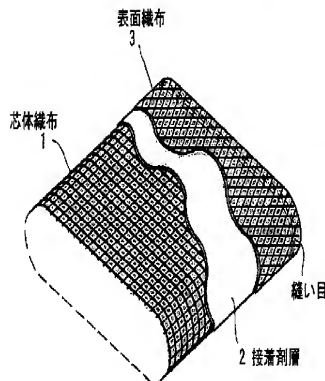
DRAWINGS

[Drawing 1]

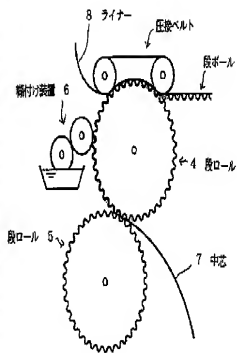


[Drawing 2]

Drawing selection **Representative draw**



[Translation done.]



[Translation done.]